Long Term and Post Acute Care
LTPAC HIT
Health IT Collaborative ■ www.ltpachealthit.org

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Acting Assistant Secretary for Health
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200 Independence Avenue SW
Washington, DC, 20201

RE: Electronically Submitted Comments on the *Draft 2016 Interoperability Standards Advisory*

Dr. DeSalvo:

The Long-Term and Post-Acute Care (LTPAC) Health IT Collaborative ("the Collaborative") appreciates the opportunity to provide the following comments on the *Draft 2016 Interoperability Standards Advisory*. The LTPAC Health IT Collaborative is a public-private group of stakeholder organizations representing associations, providers, policy-makers, researchers, vendors, and professionals with a mission to coordinate the sector and maintain alignment with the national priorities.

Members of the LTPAC Health IT Collaborative reviewed and discussed the *Draft 2016 Interoperability Standards Advisory* and our comments, feedback and suggestions are below. Section I provides general comments on the information and data presented in the Advisory, and Section II provides more detailed comments around specific standards. We look forward to continuing to work with the Office of the National Coordinator (ONC) to identify and address issues pertinent to the LTPAC sector.

I. General Comments

1. *The Collaborative appreciates the user-friendly format used for displaying relevant and important information on each standard. However, we still have some questions and have identified areas where ONC should provide additional context and/or explanation.*

- We believe the table format to display relevant information on each standard is user-friendly, straightforward, and easy to navigate. We appreciate the inclusion of a dictionary that defines each component of the table. In response to question 4-1 (in Section IV of the Advisory), we support the heading change from "Purpose" to "Interoperability Need" and believe it communicates a clear intent.
- However, we question who the intended audience of the Advisory is – Providers? Vendors? – and we seek additional guidance on its intended use.
- In reviewing the *2015 Advisory*, we found ONC's explanation of the *Advisory* as a tool designed "to prompt focused industry dialogue on areas where disagreement exists regarding the best available standards" and a means for providing "clarity, consistency, and predictability for the public" as to ONC's assessment of what is considered the "best available" standards and implementation specifications for a given clinical health IT. **The Collaborative recommends this language be included in the *2016 Advisory* as well.**
- In government documents, the term "provider" is often used interchangeably to refer to a health care facility or an attending physician or physician extender. While the use of the term

"provider" is often understood in the context of the language for a rule or regulation, it would be helpful for the national nomenclature to distinguish provider facilities from attending physicians. In particular, when discussing participation in the Meaningful Use (MU) EHR Incentive Program, **we recommend that a distinction be made between MU-eligible provider facilities, provider physicians, and non-eligible provider organizations such as LTPAC facilities.**

2. *The Collaborative has concerns that the Adoption Level measure that appears alongside each standard does not accurately reflect that of LTPAC providers.*

- We wish to note that even though LTPAC providers are ineligible for EHR incentives under Meaningful Use, several software development and vendor companies that serve the LTPAC sector voluntarily pursued certification and are listed on ONC's Certified Health IT Product List (CHPL).
- While there is not a reliable source that measures the adoption rate of certain standards within the LTPAC sector, the Collaborative believes that Adoption Levels among LTPAC, behavioral health, and other providers ineligible for Meaningful Use incentives are much lower than are reported in the Advisory. Please see **Appendix A** in this document which provides a comparison of adoption levels of in 2016 Standards Advisory with LTPAC EHR vendors who have reported whether or not they use the specified standard, from the Center for Aging Services Technology (CAST) 2015 Selection Matrix.
    - Example: The interoperability need "Support a transition of care or referral to another provider" lists two standards (CDAr2 and CCDA R1.1) with an adoption rate for each at 81-100%. The CAST 2015 Selection Matrix of LTPAC EHR vendors (see **Appendix A**) identifies 50% or less have included these standards in their system. Based on anecdotal information the Collaborative has noted that far fewer LTPAC providers (e.g. nursing facilities, home health agencies, etc.) are using the standard to exchange transition of care or referral documents than indicated in the *Standards Advisory*.
- **The Collaborative recommends that ONC include clarifying language in its definition of "Adoption Level" in the *Standards Advisory*, to make the distinction between entities that were eligible for participation in the MU program (e.g., hospitals, physicians) and those that were not (e.g., LTPAC facilities).**
- The Collaborative also has concerns that just because a provider organization or a vendor has adopted the capability to utilize certain standards, it does not automatically mean that the standards are being used in practice. As we show in **Appendix A**, we have identified specific standards that show relatively high adoption level scores, but which we believe may not be used to the extent implied by that score.
- **The Collaborative recommends that ONC consider exploring potential ways to distinguish between an entity's "capability" to use a standard (i.e., "perceived" adoption), and the practical usage of that standard in daily operations.**

3. *To be more meaningful and usable to LTPAC providers, the Standards Advisory should explicitly address the discrepancy that exists between entities that were eligible to participate in the MU program and those that were not.*

- Because LTPAC providers were unable to take advantage of incentive funding, adoption of health IT in LTPAC settings has been much slower and more widely varied than in hospital and physician settings.
- The LTPAC sector often has higher "perceived" rates of adoption. Perceived adoption rates do not necessarily correlate to whether or not the provider is meaningfully utilizing the full functionality of the technology.
- **The Collaborative recommends that ONC consider ways to account not only for adoption of standards, but also for whether and how entities are using the information, to better account for whether or not entities are electronically sharing information with hospitals, physicians and other providers.**
- While the MU program has been successful in promoting adoption of technology in acute care settings, LTPAC providers have been slower to adopt such technologies. The MU program may have inadvertently widened the gap between acute and LTPAC providers in terms of adoption rates. The Collaborative feels that if there is not sufficient explanation of this discrepancy, it could cause confusion or misunderstanding among those who use the *Advisory*.
- **The Collaborative recommends that ONC conduct a gap analysis to better understand the discrepancy between MU and non-MU entities in the adoption rate of interoperability standards.**

II. Comments on Specific Standards

I-B: Care Team Member

- National Provider Identifier (NPI): We are concerned that use of the NPI for the definition of care team is too limiting and cannot account for all of the various members of the extended care team and support providers that are integral on the care team.[1] The use of the NPI alone is not adequate to identify all care team members.
    - Examples of individual providers who are part of a care team and may not have an NPI include social workers, dieticians/nutrition specialists, recreation/activity specialists, nurses, and ministers, etc., who do not bill for their services.
    - Examples of service and support providers that may be an integral part of an extended care team also include transportation providers, meal services in the community, and community case workers, etc. These types of service providers may not be HIPAA-covered entities subject to use of the NPI, but contribute significantly to transitions of care.

I-F: Functional Status/Disability

- The Collaborative recognizes that there are currently few content/vocabulary standards for functional status as noted in the *2016 Standards Advisory*, and we appreciate ONC's recognition of the importance of this type of clinical health information particularly for meeting the medical,

[1] NPI: What You Need to Know. Center for Medicare and Medicaid Services. 2004. https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/NPIBooklet.pdf

health and wellness needs of patients served in the LTPAC, home & community-based services and supports, and disability communities.

- We believe that identification of content/vocabulary standards around this category is increasingly important, especially since CMS recently released a final rule identifying functional change as one of four key quality process measures as required under the IMPACT Act with reporting by post-acute providers beginning by October 1, 2016.
- CMS is mandated by the IMPACT Act to utilize standardized (uniform) patient assessment data among four post-acute care settings (long-term care hospitals, inpatient rehab facilities, home healthcare agencies, and nursing facilities). These settings treat approximately 7 million patients each year[2]. As the IMPACT Act is implemented, uniform data regarding patient comparisons will be collected and compared across these four care settings.
- Content/vocabulary and exchange standards (and related tools) have been developed in the LTPAC sector to support the exchange and reuse of assessment data which supports coordination and transitions of care. The content/vocabulary standards identified to represent functional status assessment content are both LOINC and SNOMED. The exchange standards which have been developed for assessment instruments include the HL7 Implementation Guide for CDA® Release 2: Patient Assessments, Release 1 and HL7 Implementation Guide for CDA® Release 2: Long-Term Post-Acute Care Summary, DSTU Release 1 (US Realm). We encourage ONC to consider these standards as part of their *Standards Advisory,* to support future updates, and evaluate migration opportunities to C-CDA templates.
- **The Collaborative recommends that ONC recognize and build upon the major activities occurring in the LTPAC settings including functional status content, health IT standards, and legislative/regulatory activities and uses this as a foundation to advance (and update) industry content and exchange standards.**
- We appreciate the inclusion of a functional status category under Section I: Best Available Vocabulary/Code Set/Terminology Standards and Implementation Specifications. We believe that standardization around this category will be increasingly important as reporting on functional change post-acute providers will begin by October 2016.
- Multiple clinicians (e.g., physical therapists, occupational therapists, speech-language pathologists, nurses and other clinicians) assess and treat patients' functional abilities, each using discipline-specific nomenclature to describe a patient's condition and functional abilities.
- **We encourage ONC to work with members of the LTPAC HIT Collaborative, the therapy disciplines, and other stakeholders in considering resources for describing and measuring health and disability for patients in the LTPAC settings.**

II-E: Electronic Prescribing

- The *Advisory* lists five specific transactions within the NCPDP SCRIPT Version 10.6 standard that is listed under Section II-E Electronic Prescribing, including transactions for a new prescription (NewRx); a refill request; cancel prescription (CancelRx); fill status (RxFill); and medication history (RxHistory). The two transactions that list adoption levels as "unknown" – CancelRx and RxFill – are commonly used transactions by the LTPAC sector.

[2] Dougherty, M., Harvell, J, Williams, M., Millenson, M. EHR Payment Incentives for Providers Ineligible for Payment Incentives and Other Funding Study. June 2013. http://aspe.hhs.gov/basic-report/ehr-payment-incentives-providers-ineligible-payment-incentives-and-other-funding-study#ineligible

- Notifying a prescriber of fill status is important to the retail pharmacy setting to help communicate medication adherence; however, this transaction is critically important for patients in LTPAC settings. Nursing facilities, for example, must know the fill status and the corresponding prescription number so it could be resupplied in the future or even canceled by referencing the RxReference Number.
- In working to implement and operationalize the NCPDP SCRIPT 10.6 standard in challenging environments such as LTPAC, we have identified certain limitations that NCPDP is addressing in future iterations of the standard. **We recommend that ONC consider having Standards Development Organizations (SDOs) like NCPDP review the notation for "Limitations, Dependencies, and Preconditions for Consideration" so as to better reflect the iterative process these standards undergo.**

II-J: Patient Preference/Consent

- Patient preference and consent issues are often nuanced in LTPAC settings as individuals may have either legally-designated or informally designated proxies to communicate preferences and consent.
    - ***Limitations, Dependencies, and Preconditions for Consideration Feedback Section:*** The Collaborative request that additional information be provided on the application of this standard for patients who have limitations in their cognitive and physical status that limits their ability to provide preference information and consent. It was not clear from materials available how the standard accommodates patient limitations to provide this information and the use of proxies.

The LTPAC HIT Collaborative appreciates the opportunity to share our comments on the *ONC 2016 Standards Advisory* and we look forward to working with you on any of the issues highlighted in these remarks or otherwise.

Best Regards,

LTPAC Health IT Collaborative
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Attachment A: Comparison on Adoption Levels of in *2016 Standards Advisory* with LTPAC EHR Vendor Reporting

The CAST 2015 EHR Selection Matrix[3] includes self-reported data from LTPAC vendors on use health IT standards. The table below provides a summary of the adoption of each standard in the *2016 Standards Advisory* based on data reported by the LTPAC EHR Vendor community. Please note, in the EHR Matrix, reporting on the use of a standard is not specific to clinical health information (e.g., allergies) and collects data on use by standard. The Collaborative is providing this information to address our concern about the adoption levels of standards in the *2016 Standards Advisory* and whether it reflects accurate information across health care sectors not limited to the Meaningful Use eligible providers.

Table 1: Comparison on Adoption Levels of in 2016 Standards Advisory with LTPAC EHR Vendor Reporting

Clinical Health Information or Interoperability	Standard	Adoption Level in Advisory	Self-Reported Use Reported by LTPAC EHR Vendors in 2015[4]
Representing patient allergic reactions	SNOMED-CT	61-80%	12 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement SNOMED-CT
Representing patient allergens: medications	RxNorm	61-80%	12 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement RxNorm
Representing patient allergens: food substances	SNOMED-CT	Unknown	12 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement SNOMED-CT
Representing care team member (health care provider)	NPI	21-40%	
Documenting patient encounter diagnosis	SNOMED-CT	61-80%	12 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement SNOMED-CT
Documenting patient encounter diagnosis	ICD-10-CM	61-80%	26 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement ICD-10 (24 have built in compatibility, and 2 use billing clearinghouse)
Representing patient race and ethnicity	OMB standards for Maintaining, Collecting, and Presenting Federal Data on Race and Ethnicity, Statistical Policy Directive No. 15, Oct 30, 1997	81-100%	
Representing patient family health history	SNOMED-CT	61-80%	12 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement SNOMED-CT

[3] CAST 2015 EHR Selection Matrix.
http://www.leadingage.org/uploadedFiles/Content/Centers/CAST/Technology_Selection_Tools/EHR_Matrix.pdf

[4] Ibid (CAST 2015 EHR Selection Matrix)

Clinical Health Information or Interoperability	Standard	Adoption Level in Advisory	Self-Reported Use Reported by LTPAC EHR Vendors in 2015[4]
Representing patient functional status and/or disability	(none)	N/A	
Representing patient gender identity	SNOMED-CT	Unknown	12 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement SNOMED-CT
Representing patient sex (at birth)	HL7 Version 3 value set for administrative gender	61-80%	2 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix explicitly mentions that they implement HL7 Version 3
Representing patient sexual orientation	SNOMED-CT	Unknown	12 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement SNOMED-CT
Representing immunizations - historical	HL7 Standard Code Set CVX—Clinical Vaccines Administered	81-100%	
Representing immunizations - historical	HL7 Standard Code Set MVX -Manufacturing Vaccine Formulation	61-80%	
Representing immunizations – administered	HL7 Standard Code Set CVX—Clinical Vaccines Administered	81-100%	
Representing immunizations – administered	National Drug Code	81-100%	20 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement National Drug Codes
Representing laboratory tests and observations	LOINC	61-80%	13 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement LOINC
Representing patient medications	RxNorm	81-100%	12 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement RxNorm
Representing numerical references and values	The Unified Code of Units of Measure	41-60%	
Representing patient “problems” (i.e., conditions)	SNOMED-CT	81-100%	12 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement SNOMED-CT
Representing patient preferred language	RFC 5646	Unknown	
Representing dental procedures performed	Code on Dental Procedures and Nomenclature (CDT)	81-100%	
Representing medical procedures performed	SNOMED-CT	81-100%	12 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement SNOMED-CT
Representing medical procedures performed	the combination of CPT-4/HCPCS	81-100%	19 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement CPT/HCPCS
Representing medical procedures performed	ICD-10-PCS	61-80%	26 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement ICD-10 (24

Clinical Health Information or Interoperability	Standard	Adoption Level in Advisory	Self-Reported Use Reported by LTPAC EHR Vendors in 2015[4]
			have built in compatibility, and 2 use billing clearinghouse)
Representing radiological interventions and procedures	LOINC	21-40%	13 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement LOINC
Representing patient smoking status	SNOMED-CT	81-100%	12 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement SNOMED-CT
Representing unique implantable device identifiers	Unique device identifier as defined by the Food and Drug Administration at 21 CFR 830.3	0-20%	
Recording patient vital signs	LOINC	81-100%	13 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement LOINC
Sending a notification of a patient's admission, discharge and/or transfer status	HL7 2.x ADT message	81-100%	16 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 2.x including ADT
Documenting patient care plans	HL7 Clinical Document Architecture (CDA®), Release 2.0, Final Edition	81-100%	14 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 CDA Release 2
Documenting patient care plans	HL7 Implementation Guide for CDA® Release 2: Consolidated CDA Templates for Clinical Notes (US Realm), Draft Standard for Trial Use, Release 2.1	Unknown	14 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 CDA Release 2
Shareable clinical decision support	HL7 Implementation Guide: Clinical Decision Support Knowledge Artifact Implementation Guide, Release 1.3, Draft Standard for Trial Use.	Unknown	
The ability for pharmacy benefit payers to communicate formulary and benefit information to prescribers systems	NCPDP Formulary and Benefits v3.0	81-100%	
A prescriber's ability to create a new prescription to electronically send to a pharmacy	NCPDP SCRIPT Standard, Implementation Guide, Version 10.6	81-100%	19 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement NCPDP 10.6 or higher

Clinical Health Information or Interoperability	Standard	Adoption Level in Advisory	Self-Reported Use Reported by LTPAC EHR Vendors in 2015[4]
Prescription fill request	NCPDP SCRIPT Standard, Implementation Guide, Version 10.6	61-80%	19 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement NCPDP 10.6 or higher
Cancellation of a prescription	NCPDP SCRIPT Standard, Implementation Guide, Version 10.6	Unknown	19 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement NCPDP 10.6 or higher
Pharmacy notifies prescriber of prescription fill status	NCPDP SCRIPT Standard, Implementation Guide, Version 10.6	Unknown	19 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement NCPDP 10.6 or higher
A prescriber's ability to obtain a patient's medication history	NCPDP SCRIPT Standard, Implementation Guide, Version 10.6	41-60%	19 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement NCPDP 10.6 or higher
Representing family health history for clinical genomics	HL7 Version 3 Standard: Clinical Genomics; Pedigree	0-20%	2 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix explicitly mentions that they implement HL7 Version 3
Representing family health history for clinical genomics	HL7 Version 3 Implementation Guide: Family History/Pedigree Interoperability, Release 1	0-20%	2 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix explicitly mentions that they implement HL7 Version 3
Medical image formats for data exchange and distribution	Digital Imaging and Communications in Medicine (DICOM)	81-100%	
Exchange of imaging reports	Digital Imaging and Communications in Medicine (DICOM)	81-100%	
Exchange of imaging reports	PS3.20 Digital Imaging and Communications in Medicine (DICOM) Standard – Part 20: Imaging Reports using HL7 Clinical Document Architecture.	0-20%	
Receive electronic laboratory test results	HL7 2.5.1	81-100%	
Receive electronic laboratory test results	HL7 Version 2.5.1 Implementation Guide: S&I Framework Lab Results Interface, Release 1—US Realm [HL7 Version 2.5.1: ORU_R01] Draft Standard for Trial Use, July 2012	61-80%	

Clinical Health Information or Interoperability	Standard	Adoption Level in Advisory	Self-Reported Use Reported by LTPAC EHR Vendors in 2015[4]
Ordering labs for a patient	HL7 2.5.1	81-100%	
Support the transmission of a laboratory's directory of services to health IT.	HL7 2.5.1	81-100%	
A standard mechanism for clinical information systems to request context-specific clinical knowledge form online resources	HL7 Version 3 Standard: Context Aware Knowledge Retrieval Application. ("Infobutton"), Knowledge Request, Release 2.	61-80%	2 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix explicitly mentions that they implement HL7 Version 3
A standard mechanism for clinical information systems to request context-specific clinical knowledge form online resources	HL7 Implementation Guide: Service-Oriented Architecture Implementations of the Context-aware Knowledge Retrieval (Infobutton) Domain, Release 1.	41-60%	
A standard mechanism for clinical information systems to request context-specific clinical knowledge form online resources	HL7 Version 3 Implementation Guide: Context-Aware Knowledge Retrieval (Infobutton), Release 4.	41-60%	2 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix explicitly mentions that they implement HL7 Version 3
Recording patient preferences for electronic consent to access and/or share their health information with other care providers	IHE Basic Patient Privacy Consents (BPPC)	61-80%	9 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement IHE Basic Patient Privacy Consents (BPPC)
Recording patient preferences for electronic consent to access and/or share their health information with other care providers	IHE Cross Enterprise User Authorization (XUA)	61-80%	
Reporting antimicrobial use and resistance information to public health agencies	HL7 Clinical Document Architecture (CDA®), Release 2.0, Final Edition	81-100%	14 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 CDA Release 2

Clinical Health Information or Interoperability	Standard	Adoption Level in Advisory	Self-Reported Use Reported by LTPAC EHR Vendors in 2015[4]
Reporting antimicrobial use and resistance information to public health agencies	HL7 Implementation Guide for CDA® Release 2 – Level 3: Healthcare Associated Infection Reports, Release 1, U.S. Realm.	21-40%	14 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 CDA Release 2
Reporting cancer cases to public health agencies	HL7 Clinical Document Architecture (CDA®), Release 2.0, Final Edition	81-100%	14 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 CDA Release 2
Reporting cancer cases to public health agencies	HL7 Implementation Guide for CDA® Release 2: Reporting to Public Health Cancer Registries from Ambulatory Healthcare Providers, Release 1 - US Realm	41-60%	14 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 CDA Release 2
Reporting cancer cases to public health agencies	HL7 CDA ® Release 2 Implementation Guide: Reporting to Public Health Cancer Registries from Ambulatory Healthcare Providers, Release 1, DSTU Release 1.1 – US Realm	0-20%	14 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 CDA Release 2
Case reporting to public health agencies	IHE Quality, Research, and Public Health Technical Framework Supplement, Structured Data Capture, Trial Implementation, HL7 Consolidated CDA® Release 2.0	0-20%	14 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 CDA Release 2
Case reporting to public health agencies	Fast Healthcare Interoperability Resources (FHIR)	0-20%	2 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement FHIR
Case reporting to public health agencies	Structured Data Capture Implementation Guide	0-20%	
Electronic transmission of reportable lab results to public health agencies	HL7 2.5.1	81-100%	13 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 Version 2.5

Clinical Health Information or Interoperability	Standard	Adoption Level in Advisory	Self-Reported Use Reported by LTPAC EHR Vendors in 2015[4]
Electronic transmission of reportable lab results to public health agencies	HL7 Version 2.5.1: Implementation Guide: Electronic Laboratory Reporting to Public Health (US Realm), Release 1 with Errata and Clarifications and ELR 2.5.1 Clarification Document for EHR Technology Certification	81-100%	13 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 Version 2.5
Sending health care survey information to public health agencies	HL7 Clinical Document Architecture (CDA®), Release 2.0, Final Edition	81-100%	14 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 CDA Release 2
Sending health care survey information to public health agencies	HL7 Implementation Guide for CDA® R2: National Health Care Surveys (NHCS), Release 1 - US Realm	0-20%	14 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 CDA Release 2
Reporting administered immunizations to immunization registry	HL7 2.5.1	81-100%	13 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 Version 2.5
Reporting administered immunizations to immunization registry	HL7 2.5.1 Implementation Guide for Immunization Messaging, Release 1.4	81-100%	13 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 Version 2.5
Reporting syndromic surveillance to public health (emergency department, inpatient, and urgent care settings)	HL7 2.5.1	81-100%	13 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 Version 2.5
Reporting syndromic surveillance to public health (emergency department, inpatient, and urgent care settings)	PHIN Messaging Guide for Syndromic Surveillance: Emergency Department and Urgent Care Data Release 1.1	61-80%	
Reporting syndromic surveillance to public health (emergency department, inpatient, and urgent care settings)	PHIN Messaging Guide for Syndromic Surveillance: Emergency Department, Urgent Care, Inpatient and Ambulatory Care Settings, Release 2.0	0-20%	
Reporting aggregate quality data to quality reporting initiatives	HL7 Clinical Document Architecture (CDA®), Release 2.0, Final Edition	81-100%	14 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 CDA Release 2

Clinical Health Information or Interoperability	Standard	Adoption Level in Advisory	Self-Reported Use Reported by LTPAC EHR Vendors in 2015[4]
Reporting aggregate quality data to quality reporting initiatives	HL7 Implementation Guide for CDA® Release 2: Quality Reporting Document Architecture - Category III (QRDA III), DRAFT Release 1	61-80%	14 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 CDA Release 2
Reporting patient-level quality data to quality reporting initiatives	HL7 Clinical Document Architecture (CDA®), Release 2.0, Final Edition	81-100%	14 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 CDA Release 2
Reporting patient-level quality data to quality reporting initiatives	HL7 Implementation Guide for CDA® Release 2: Quality Reporting Document Architecture – Category I, DSTU Release 2 (US Realm)	61-80%	14 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 CDA Release 2
Reporting patient-level quality data to quality reporting initiatives	HL7 CDA® R2 Implementation Guide: Quality Reporting Document Architecture - Category I (QRDA I) DSTU Release 3 (US Realm)	21-40%	14 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 CDA Release 2
Representing clinical health information as "resource"	Fast Healthcare Interoperability Resources (FHIR)	0-20%	2 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement FHIR
Document-level segmentation of sensitive information	HL7 Clinical Document Architecture (CDA®), Release 2.0, Final Edition	81-100%	13 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 Version 2.5
Document-level segmentation of sensitive information	Consolidated HL7 Implementation Guide: Data Segmentation for Privacy (DS4P), Release 1	0-20%	12 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 Consolidated CDA
Support a transition of care or referral to another provider	HL7 Clinical Document Architecture (CDA®), Release 2.0, Final Edition	81-100%	13 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 Version 2.5
Support a transition of care or referral to another provider	Consolidated CDA® Release 1.1 (HL7 Implementation Guide for CDA® Release 2: IHE Health Story Consolidation, DSTU Release 1.1 - US Realm)	81-100%	12 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 Consolidated CDA

Clinical Health Information or Interoperability	Standard	Adoption Level in Advisory	Self-Reported Use Reported by LTPAC EHR Vendors in 2015[4]
Support a transition of care or referral to another provider	HL7 Implementation Guide for CDA® Release 2: Consolidated CDA Templates for Clinical Notes (US Realm), Draft Standard for Trial Use, Release 2.1	Unknown	12 of 26 LTPAC EHRs included in the CAST 2015 EHR Matrix implement HL7 Consolidated CDA